



# HAM HUM

Published by  
AK-SAR-BEN RADIO CLUB, INC. - Omaha, Nebr. 68101  
Post Office Box 291 - Downtown Station

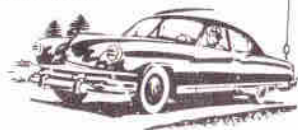


October-November

Vol. XVI  
No. 10-11

NEXT MEETING OF THE  
AK-SAR-BEN RADIO CLUB, INC.  
WILL BE HELD AT THE 4-H  
BUILDING, AK-SAR-BEN FIELD,  
ON FRIDAY, NOVEMBER 11, 1966  
AT 8:00 P.M.

**HAM HUM** is the official organ of the Ak-Sar-Ben Radio Club, Inc., of Omaha, Nebraska, mailed monthly to all members and to others upon request.



Published by  
AK-SAR-BEN RADIO CLUB, INC.  
Post Office Box 291  
Omaha 1, Nebraska  
Editor: Dick Eilers, WØYZV  
Phone HOME: 391-2255  
BUSINESS: 342-1402 - EX. 32  
Associate Editor: John Snyder, WØWR  
Phone HOME: 556-1538  
BUSINESS: 551-0669 - EX. 317

## OCTOBER MEETING

After a brief business meeting on October 14th at which several new members were welcomed into the Club (see listing elsewhere in this issue), Cecil D. DeWitt, WØRMB, gave a talk on the use of the oscilloscope as a means of studying the received signal. In order to properly evaluate the signal coming in on your receiver and to give a more logical and factual report of the received signal, an oscilloscope can be used to indicate percentage of modulation as well as distortion due to hum or faulty transmitter operation. Should you desire a report on your signal I am sure Cecil will be glad to accommodate you, particularly if you are on six meters. I am sure he would give you an evaluation of your signal on other bands by arrangement as he has receiving capability on most any band.

The talk was enjoyed by those present and no doubt some have now connected their own scope. Our thanks to WØRMB!

After the talk we enjoyed coffee and doughnuts as well as the general conversations.

\*\*\*\*\*

10-15-66

Hi:

Just a line to let you know I've been transferred back into Ø land. Just barely tho, I'm only about 3 miles north of the Oklahoma line.

The new QTH is 1516 Country-side Drive, Liberal, Kansas 67901. Now Ham Hum can find me again. Enclosed find a buck to help with the postage.

I'm waiting to get my ticket back from FCC and I'll let you know my new call as soon as I know it.

I attended a meeting of the Liberal Amateur Radio Club the other night. They are a young club, and suffer from many of the same things that have bothered Ak-Sar-Ø for years.

73,  
Dick Reimund  
W5KTI/Ø

\*\*\*\*\*

THE AK-SAR-BEN RADIO CLUB assisted in the CITY OF HOPE Fund Drive, Sunday, October 30, 1966.

Base station, relay station and mobile units were used and pickups were made from collection centers about town and delivered to the fund headquarters.

A total of 73 messages were handled and were not completed until 7:00 p.m.

The mobile chairman wishes to thank the following people who took an active part in the drive:

Lou	WØVLI	2 meter link - Hope Headquarters
Fred	WØEGP	2 meter link - Base Station
Bud	WAØICK	Base Operator
Ed	WØYEV	Dispatcher
Larry	K5UYH/Ø	Mobile
Don	WA5BWU/Ø	Rider
Ed	KØEYR	Mobile
Jeannie	XYL KØEYR	Rider
Royal	KØLYO	Mobile
John	WAØLMA	Mobile
Jim	WAØMHF	Rider
Royce	WAØKIL	Mobile
Virginia	WAØNCO	Rider

Royce E. Johnson  
Mobile chairman

\*\*\*\*\*

**OFFICIAL BULLETIN NR 84 FROM  
ARRL HEADQUARTERS NEWING-  
TON CONN OCT 27 1966 TO ALL  
RADIO AMATEURS BT**

**WANTED**

A 15GP22 color picture tube in good condx. or will sell or swap a 15" RCA CT-100 color receiver which needs this tube. This is the type receiver for all of today's color TV receivers - came out in 1954.

Call John Snyder, WØWRT  
556-1538 or

Days - 551-0669, X 517

\*\*\*\*\*

Attention DXers. WØGTA/8F4 is now operating from Indonesia with the express authority of the local government. FCC, therefore, will have no objection to United States amateurs working this station within the framework permitted by the Indonesian authorities, not including third party traffic. This permission covers the period October 18 through December 31, 1966 AR

\*\*\*\*\*

## A PRIMER ON CRYSTAL CONTROLLED OSCILLATORS

By Bud, WB6AJU  
Research Chairman

Oscillators are important gadgets to us hams. Even aside from their uses in receivers, the ever present oscillator is a necessity for any transmitter. For CW use, the entire transmitter might be made up of an oscillator and a power supply - and in any other rig, at least one oscillator must be included to generate the carrier frequency.

Since the oscillator is such an important device, it has undergone thorough study by many researchers, and as a result literally hundreds of oscillator circuits have been published. Choosing the best circuit for your own use from this mass of material becomes difficult and many otherwise worthwhile circuits have become lost simply because not enough people have learned about them. We are going to explore the entire subject of vacuum tube oscillators, including several circuits which haven't seen much use as well as some of the old standards of the field.

The crystal of the crystal oscillator is a small piece of Brazilian quartz ground to precise size and thickness. The physical dimensions of the rock determine the natural resonant frequencies. In the proper circuit, these natural resonant frequencies determine the operational frequency of an electronic oscillator. Since the crystal resonance is determined by physical means rather than electronic elements, the

frequency remains much more stable than would otherwise be possible. Frequency stability as great as one part in ten billion (that's 0.000-00001%) is possible with the proper crystal circuit and construction.

You may have noticed that all through last paragraph we were talking about the crystal resonant frequencies although only one value is marked on any commercial crystal. That was not a mistake; all quartz crystals exhibit multiple resonances. The marked frequency is the one at which the rock is intended to operate but operation at any of the other resonances is usually possible. One of the best examples of multiple resonance operation is the conventional overtone crystal which operates at the third harmonic of the fundamental frequency through proper circuit design. Frequently, these crystals may be coaxed into operation at other overtones as well.

One way of grasping the idea of a crystal's operation is to examine its equivalent circuit, shown in Fig. 1. This is what a crystal looks like to the circuit electronically. You can see that the several series-resonant circuits also form parallel-resonant circuits at other frequencies. This multiple-resonance quality of a crystal is shown in Fig. 2 as a frequency spectrum for a typical unit.

At this point, let's concentrate on just one of these series circuits shown in Fig. 1 - the one shown in

heavy line. This is the primary resonance of the crystal, the one at which it will oscillate or transmit most readily. It's drawn separately in Fig. 3 along with the shunt capacitance of the electrodes which contact with the two sides of the rock itself. You can easily see that at one frequency,  $C_1$  will be almost a short circuit which leaves only a parallel-resonant tank circuit, while at some other frequency  $C_h$  will be almost an open circuit which leaves only a series-resonant arrangement. In practice, these two frequencies are usually within a very few Kc of each other, which leads to the crystal impedance curve shown in Fig. 4.

It is important to remember that every crystal has both series and parallel resonance at its primary frequency; at the other resonance frequencies this may not be so since the effective values of inductance

and capacitance may be so different. However, in fundamentally tuned frequency operation some circuits use series resonance and others employ the parallel or anti-resonant condition. This makes the rock operate at two slightly different frequencies depending on which type of circuit it's used in.

In addition, external circuit capacitance or inductance will also reflect back into the equivalent circuit of Fig. 3 which causes slight changes of frequency with changes of external elements. This can be used as an aid to getting precise spot frequency results, especially at VHF, by connecting a trimmer capacitor across a crystal operating in parallel mode or in series with a series mode crystal. However, it can also be a hindrance if you don't make allowance for it in building equipment which will use a crystal oscillator.

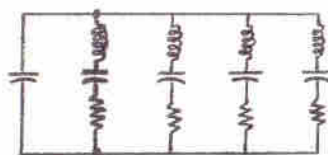


FIG. 1

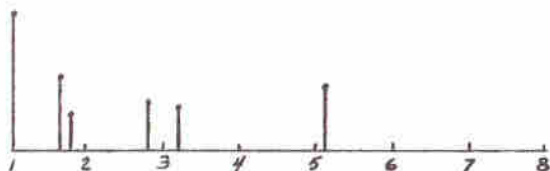


FIG. 2

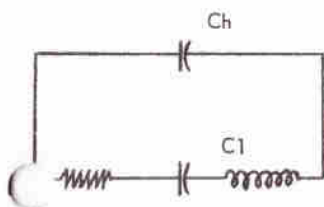


FIG. 3

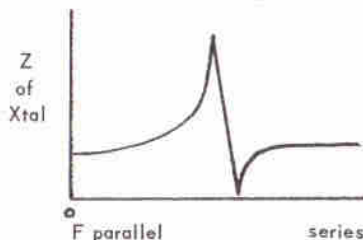


Fig. 4

de Signal Clipper, Simi, Calif.

\*\*\*\*\*

October 19, 1966

AK-SAR-BEN Radio Club, Inc.  
P.O. Box 291 Downtown Station  
Omaha, Nebr. 68101

Hi:

The VHF gang met at Fred Evans home, (WØBLM) Oct. 19, for an eyeball QSO, and planning for better development of the emergency net, also examined several types of mobile antennae. Eight hams present, including WØGEQ of Ogallala. Plan for schedule with Ogallala soon, and discusses various rigs, modes, and antennae. Set a local frequency of 144.175 mc.

The widespread damage by sleet storms takes its toll of antennae as well as power lines, telephone lines etc. Plan now for some sort of emergency antenna and feed-line you can string up quick and easy, then build it and test it before storing it.

Try and get some sort of emergency power supply ready also, at least enough to charge the battery on the mobile, remember that gas might be difficult to obtain during an electrical outage, no gas pumps working, so even a generator to the garden tractor or lawn mower engine will help.

73

Dayton L. Phifer, WØVEA

P.S. A car generator runs much slower than the small gas engines, check both operating speeds to determine gear ratio or pulley reduction size.

\*\*\*\*\*

## NEW MEMBERS ADDITIONS TO ROSTER

Tom Adams, KØWQR  
5023 Frances Street  
Omaha, Nebraska 68106  
Phone: 558-2668

James C. Droege, WØYCP  
6328 Hamilton Street  
Omaha, Nebraska 68132  
Phone: 556-7945

Edward Kilton, KØEYR  
4443 H Street  
Omaha, Nebraska 68107  
Phone: 733-5199

Jean Kilton, XYL  
4443 H Street  
Omaha, Nebraska 68107  
Phone: 733-5199

Robert C. Lockwood, WAØDHU  
3711 North 56th Street  
Omaha, Nebraska 68104  
Phone: 451-7233

\*\*\*\*\*

We would like to acknowledge with deep appreciation your kind expression of sympathy and wish to extend sincere thanks to members and the Ak-Sar-Ben Radio Club for their many acts of kindness in recent loss of our beloved father.

Ervan D. Heinz Family  
WAØEEM

\*\*\*\*\*

## Transmission Line Attenuation

Here's some data that has been asked for in the past:

	10	50	144	432	fmc
Andrew Heliac	-	0.1	0.4	0.9	atten. db/100'
Precision Coaxitube	-	0.8	1.2	2.1	
RG-218/U	0.22	0.54	1.22	2.5	
Belden 8275*	--	0.75	1.33	2.65	
Amphenol 214-103*	--	1	1.88	3.55	
Belden 8214	--	1	2.1	4	
RG-8(Foam)	0.5	1.1	2.4	4.5	
RG-213	0.54	1.5	2.85	4.8	
RG-58/U	1.6	4.2	8	Forget it	

\*300-ohm Tubular Twinlead

WØIKQ

de Cedar Valley R. C., Iowa

\*\*\*\*\*

## RULES FOR HANDLING WOMEN ELECTRICALLY

If she talks too much-----Interrupter  
 If she wants to be an angel-----Transformer  
 If she meets you half way-----Receiver  
 If she gets too excited-----Controller  
 If she gets up in the air-----Condenser  
 If she is hungry-----Feeder  
 If she sings in harmoniously-----Tuner  
 If she is wrong-----Rectifier  
 If she is too fat-----Reducer  
 If she gossips too much-----Regulator  
 If she wants to get married-----Resistor

(VIA W4SCY)

\*\*\*\*\*

## TECHNICAL NOTES

by George Fore, WØJQJ, W5CJH

### Something on filters....

If we wish to extract one or more somethings from an unsorted group, we filter them out, which is to say that we select and keep the desired element(s) and reject the rest of them.

In its rawest form, a filter consists of either a coil or a capacitor connected between a signal source and a load. Whether it is a coil or a capacitor and how (series or parallel) it is connected will determine what gets filtered. The important fact is that *something* will be filtered out or filtered through by any coil or condenser located anywhere in a working circuit.

HIGH PASS FILTERS are filters which pass (let through) higher frequency signals and attenuate (weaken, or hold back) lower frequency signals.

LOW PASS FILTERS do just the opposite. They pass lower frequencies through and reject the higher frequencies.

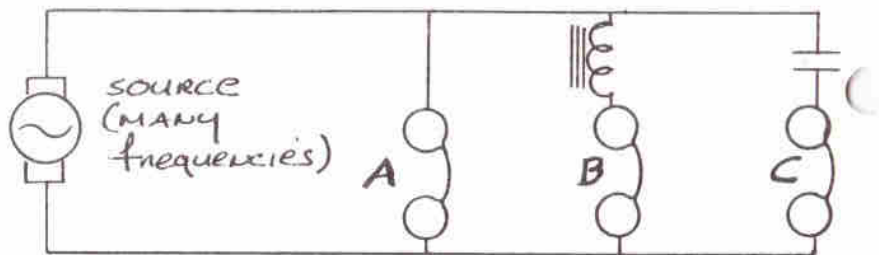
Before we look at some filtering circuits, let's consider the components which could be used to construct them. Basically, there are only three values that can serve in any electronic circuit:

1. Resistance, either the resistor as a component part, or some device which has resistance. Resistance is a *constant* SOURCE OF opposition to current flow.

2. Inductance, either the coil, or some device which has inductance. Inductance creates opposition to current flow which varies *directly with frequency*. For example, if a given coil is a 50 ohm load at 60 cycles-per-second, it will be a 100 ohm load at 120 cps., and so on.

3. Capacitance, either the capacitor as a component, or some device which had capacitance. Capacitance creates opposition to current flow which varies *inversely with frequency*. For example: if a given condenser is a 60 ohm load to a 500 kc signal, it will be a 30 ohm load to a 1,000 kc signal, and so on.

We can assume, then, three important things. One, that a resistor is a constant-value load; two, that a coil allows lower frequency currents to flow through it readily and offers greater opposition to higher-frequency currents, but passes higher-frequency currents through its circuit easily.





In the circuit above, if we listen to the signals in headset "A", we will observe all tones to have the same relative strength. But in each of the other two circuit branches, we will notice that some frequencies have been filtered out. Listening to headset "B", we will observe the lower frequencies to be stronger than the highs, since the coil is opposing the passage of high frequencies

through it. Higher frequencies will predominate in headset "C", since the capacitor is offering more opposition to the lows.

Fig. 1. Here we have a low-pass filter. The coil passes lows easily through the load, but weakens the high frequencies. This filtering action can be improved by adding a parallel capacitor.

Some possible high-pass filters:

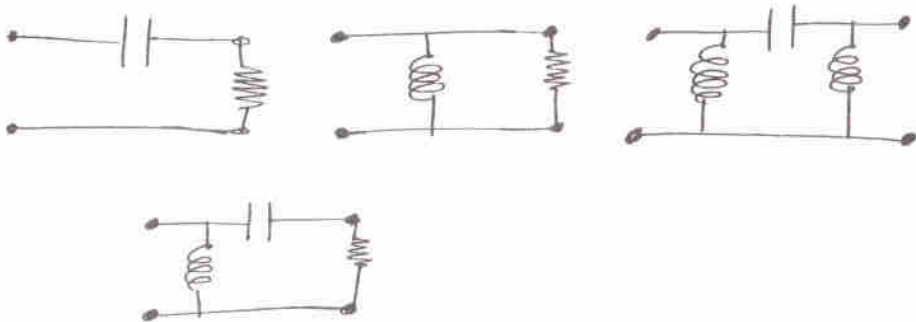
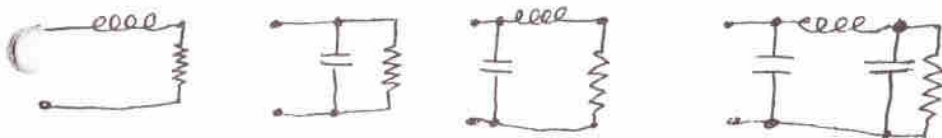


Fig. 2.--The circuit is still a low-pass filter, but more effective now since the capacitor provides a path for higher frequencies away from the load. If the positions are reversed (fig. 3), the condenser still invites the high-frequency signals, but since it is now in series,

their path is through the load. The coil still invites passage of the lows, but it shunts them around the load. The result is a high-pass filter.

In either circuit, we could eliminate either the coil or capacitor and still have same filtering effect, just less of it.

Some possible low-pass filters:



de Splatter, Minneapolis, R.C.

\*\*\*\*\*

## VHF SSB Yes or No?

By Bob Lieberman, WA9JWN/4

Why are our VHF OP's so ignorant of the new modes of transmission? I am referring to a good number of the techs on six, and a few of the generals, too. It seems apparent that a lot of our six-meter boys don't know the first thing about radio, or at least they don't show it.

The other night I was listening to a QSO on six. Two OM's were discussing the aspects and assets of VHF SSB, when one made the comment that sideband was too hard, too expensive and that there wasn't any commercial gear on the market. Well, this got me teed off a little, and I was about to bust into this QSO and tell him off when it came to mind that maybe he wasn't the only one who was so ignorant to the facts. That's why I'm writing this article.

What a lot of amateurs don't realize is the simplicity of sideband. DSB costs less to build than AM rigs, and they are easier to build also. For a few dollars more, you can build up a crystal filter and run single sideband at a price competitive with AM rigs.

The one comment in that QSO that really upset me was his immediate turn to commercial gear. Most of these guys on six are tech's; they should do a little experimenting, designing, and building, even if

they have to steal the circuits from someone else. At least they are building it themselves. A lot of the VHF OP's reject SSB because they have never listened to a good sideband receiver. If they ever did, they would probably think it the greatest thing on the air. A 1929 Essex receiver will not receive sideband properly. It wasn't designed to. Of course it means a little investment, but it is worth it in the long run. Granted, SSB isn't going to give you the Hi-Fi audio, but it does provide the most effective media of communication next to CW.

Here are a few facts about SB and AM. Compare them for yourself:

1. SB can be made simpler and cheaper than an AM rig. Dollar per watt, sideband is cheaper by far.
2. SB can provide effective Back Scatter communications.
3. SSB uses less band width. (You may say, with 4 megs we don't have that problem. However, did you ever listen to the first meg of six when the band was open, and all you had were a few low frequency crystals???)
4. DSB will give two times the effective power per watt.
5. SSB will give you four times the effective power per watt.
6. SSB along with CW gives you the punch you need on Aurora and long distance ground wave that you can't get with AM.

Sure, this article is prejudiced, but wouldn't you be, considering the advantage that SB offers to VHF communication?

(This article was written with the help of WA4LHK and K4YSN.)

de Florida Skip

\*\*\*\*\*

Adam probably was the first ham: He provided the parts for the first loudspeaker.

de Cedar Valley R. C.

Iowa

\*\*\*\*\*

**OFFICIAL BULLETIN NR 82  
FROM ARRL HEADQUARTERS  
NEWINGTON CONN OCT 13 1966  
TO ALL RADIO AMATEURS BT**

Uruguay and the U.S. have agreed to permit the handling of messages or other communications on behalf of third parties, effective immediately. Messages must not be important enough to be sent by commercial channels and neither operator may have any pecuniary interest in the traffic. The U.S. has previously signed similar agreements with Bolivia, Brazil, Canada, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Haiti, Honduras, Israel, Liberia, Mexico, Nicaragua, Panama, Paraguay, Peru and Venezuela. In addition, two stations in Greenland with XP prefixes and 4U1ITU at ITU Headquarters, Geneva, may handle h traffic. Third party countries, prefix, are CE CM CO CP CX EL HC HH HI HK HP HR OA PY TI VE VO XE XP YN YS YV ZP 4U 4X and 4Z AR

\*\*\*\*\*

## BIRDS OF THE AIRWAVES

By James T. Audiobum

From W5MS Bulletin - WA5AUB,  
Editor (frm Auto-Call)

This handy reference should increase the enjoyment of your hobby by assisting you to identify the birds which inhabit the radio spectrum around you.

The QUQ QUE - This bird has A QUE signal for everything which is helpful since he can't say anything in plain words. Call - "QUE RZ, QUE RZ....QUE RM, QUE RN, QUE SB, QUE RSM, QUE SY, QUE RX (and finally) QUE RT.

THE YELLOW BELLIED TESTER - This bird is usually found about 1000 cycles off of any regular net frequency. This spot is picked to generate the maximum interference with net operations and is highly effective. It is suspected that this bird operates a 10 kw transmitter, but this is not confirmed, since he is only heard, not seen. Call - "Hello Test, 1, 2, 3, 4" Call sign is never given and it is suspected that it is because FCC has never issued a license to this bird.

THE SIDEBANDER A GO GO - This bird has a peculiar manner of speech, all words are two syllables or less and end in go. It is not considered harmful, but is not much fun to talk to. If you should come in contact with one don't worry, it won't last long. Call - "CQ go ... W5ABC go ... John go ... Corpus

go ... S-Line go ... Quad go ...  
bye go ... CQ go .....

**THE RECEIVERLESS PAUPER** - This poor bird has spent all his money on a kw transmitter and is unable to purchase a receiver. He is usually found right in the middle of a 10-way round table. Call - "Is anyone using this frequency?" Sometimes call is "Hello, test, 1, 2, 3, 4" and it is suspected that this is the same bird as the "Yellow Bellied Tester" but this is not confirmed.

**THE KNOTHEAD KNOB TWISTER** - This bird twists the receiver knob but never the VFO knob. His call is not distinctive, but he can be readily identified since he calls stations you can't hear and gets violently angry when they don't answer.

**THE PHONETIC ALPHABET** - This bird is under the impression that everyone he contacts has a hearing deficiency and all words must be spelled out. For variety he changes phonetics with each word. Call: "Charlie Queen, Chicago Quebec ... Whiskey Fiver Alfa Bravo Charlie, handle is Bill; Boy I Love Ladies, in Corpus Christi, Cherry Orchards, Real Pretty Under Sun, Chinese Hotel Room Is Some Times Expensive. (About this time you will tune in another frequency without finding out who he is, where he is, or why he is, Whiskey Hotel Yankee...

**THE BAGGY EYED CONTESTER** - This bird is seldom heard except during operating contests. He will spend countless hours going without food, drink or sleep to get  
12

in the maximum number of contacts during the allotted period. He is readily identified by his distinctive call: "CQ Contest, CQ Contest, this is W5AUA, South Texas Section tuning ... QSL your number 47, you are my 99997, time 1234 ZUL Good Luck in Contest, CQ Contest, CQ Contest ..."

**THE NIT WITTED NETTER** - This bird is never heard on the air except during net operations. Individual birds act differently. Some will arise in the wee small hours of the morning and stay up until the late hours of the night to meet the assorted nets that are available. Others will check in late and request permission to sign out early. Some feel annoyed by the Almighty to relay all transmissions despite the fact that the Net Control Station had given the other station a 40 over 9 report. Call - "This is W5XYZ, no traffic, over."

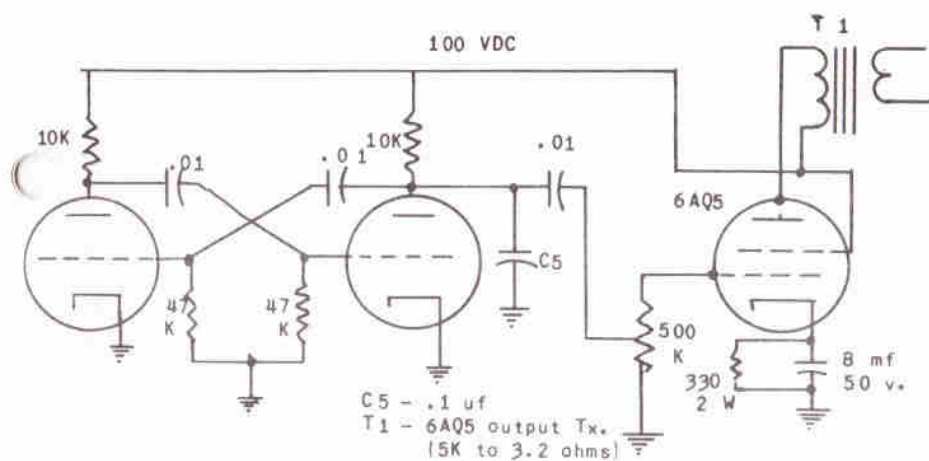
**THE PERPETUAL SIGNER OUTER** - This bird ends each transmission with this call "Well, I've got to go so you better sign me out now. This is W5ABC saying 73's and pulling the switch." Experienced bird watchers know that he will break in again in five minutes so they don't bother to log him out until they sign out themselves.

\*\*\*\*\*

***Bit by bit . . . every  
litter bit hurts!***

**KEEP AMERICA  
BEAUTIFUL!**

## INEXPENSIVE KEYING MONITOR



The circuit illustrated is an inexpensive keying monitor having enough output to drive a speaker. It may be used for code practice as well as CW monitoring because it does not depend upon an RF pick-up link near the tank circuit for actuation. As a further economy measure, the 6AQ5 audio amplifier stage may be omitted and the output from the oscillator may be fed into the audio amplifier of the receiver.

The oscillator in this circuit is a common plate coupled astable multi-vibrator. The frequency of oscillation is primarily dependent upon the time constant of the coupling capacitors and grid resistors. As the circuit diagram stands, the output frequency is fixed, but it may be lowered by increasing the value of the coupling capacitors from .01 to .02 uf. The output frequency may be made variable by substituting a 50K pot for one of the grid resistors. This pot would become the tone or pitch control.

Another advantage to using a multi-vibrator type of oscillator is the ease of which it may be turned on or off. Since the multi-vibrator utilized in this circuit is an astable multi-vibrator which does not require any external triggering pulse, it can be keyed on by grounding either cathode of the multi-vibrator, or by undergrounding either grid. Since the supply voltage is only 100 volts and the load resistor is 10K ohms, the plate current will be about 5 ma. Therefore, the tube will not be damaged if a grid is grounded. Actually, a supply voltage of up to 200 volts may be safely used. This makes a convenient way of stopping the oscillatory action of the circuit since the feedback path from one tube to the other is destroyed. This method would be especially useful in an electronic keyer where a SPDT relay is employed. The armature of the relay could be grounded and the unused contact on the relay could be tied to the grid of

the multi-vibrator, thereby silencing it during key up condition.

By John Ellis, KØMMI  
de Johnson County Radio Amateur  
Club Bulletin

ed note: The tube type number was omitted on the original copy. As a suggestion you may wish to try a 6C4 or 12AT7.

From The Ham Monitor  
Salina, Kansas

\*\*\*\*\*

## THE OLD GROUCH

Anonymous Unknown  
c/o Editor, Auto-Call  
2509 - 32nd. St., S.E.,  
Washington, D.C. 20020

I suspect that many of my readers have experienced a phenomena which appears to be increasing across the nation. I refer to the use of various mailing lists by certain agencies for shipment of unsolicited items of merchandise to potential "suckers" who are expected to pay sometimes many times the value for obviously inferior products.

Of course, there are a few instances where "charitable" organizations use this method in order to secure gifts to their causes which they characterize as donations "for service." An example of this type of operation is the mailing of miniature automobile license tags by the Disabled American Veterans in which an actual service in returning lost keys might be considered to

offset the donations. One quarrel I have with this program is that it recurs each year. The same service is offered, at no additional cost, to purchasers of certain makes of key containers and does not require renewal.

The practices with which I quarrel very strongly involves the shipment of unsolicited merchandise such as "pocket secretaries," ball point pens, and, more recently, "personalized ham jewelry."

To comment on each item mentioned, a careful appraisal of one system of "pocket secretaries" discloses that products superior in both materials used and arrangement of data space, subjects, etc. is available at business supply and stationery outlets, prepared by "big name" business form concerns, for about two thirds of the best of the unsolicited material.

Regarding the ball point pens, I was just sufficiently curious to "fall" for one of the unsolicited offerings of a pen "with your name on it" for which \$1.00 was requested (plus 5¢ postage for mailing my dollar) while at the same time I sent for - "20, just think of it, 20 ball point pens for \$1.00, post-paid" - advertised in the New York Tribune. The 5¢ pens were at least good as the unsolicited one; in fact three of them drew longer lines on a testing drum and several produced smoother and more uniform lines. There was little or no difference in material, workmanship, or finish, except for the imprinted name, certainly not worth 95¢ in itself.

The "ham jewelry" offered was

quite well made and attractive, but still, in my opinion, worth only a fraction of the quoted price unless one is a collector of tie clasps, cuff links, etc.

Postal regulations protect the recipient of such unsolicited merchandise in providing that the addressee need not even accept delivery if he can catch the mailman in time. No reply need be made to the shipper and the only responsibility placed on the recipient is that he refrain from using the material and hold it available for return to the shipper, if and when a request for its return, accompanied by postage costs, is received from the shipper.

This is one situation where a hamgram might well be used to advise the shipper that you refuse to accept the item and will hold it subject to his action for a stated period of time after which you will destroy it. I have used this procedure several times and have actually returned two unsolicited items with postage furnished by the chap who tried to strip my pocketbook.

73, The Old Grouch.

\*\*\*\*\*

**OFFICIAL BULLETIN NR 83  
FROM ARRL HEADQUARTERS  
NEWINGTON CONN OCT 20 1966  
TO ALL RADIO AMATEURS BT**

A reciprocal operating agreement is now effective between Nicaragua and the United States.

Citizens of one country visiting or residing in the other may obtain permission to operate their own amateur stations there. The United States has previously reached reciprocal agreements with Australia,

Belgium, Bolivia, Canada, Colombia, Costa Rica, the Dominican Republic, Ecuador, France, Germany, India, Israel, Kuwait, Luxembourg, Paraguay, Peru, Portugal, Sierra Leone and the United Kingdom. Many others are being negotiated and successes will be announced as they occur AR

\*\*\*\*\*

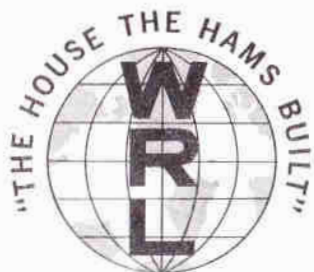
**OFFICIAL BULLETIN NR 81  
FROM ARRL HEADQUARTERS  
NEWINGTON CONN OCT 6 1966  
TO ALL RADIO AMATEURS BT**

Attention DXers. The annual December listing for the DXCC and the DXCC Honor Roll cannot appear in that issue of QST due to unusual workload and administrative circumstances. This annual list and the Honor Roll will appear in the January issue of QST. In view of this, the deadline for Honor Roll submissions has been extended to October 31. The usual list of New Members in DXCC for the month of September, will appear in the December issue AR

\*\*\*\*\*



"I don't think it'll do anything to the Moose, either."



**WORLD RADIO LABORATORIES**

DEPT. QST

3415 WEST BROADWAY/COUNCIL BLUFFS, IOWA / 51504

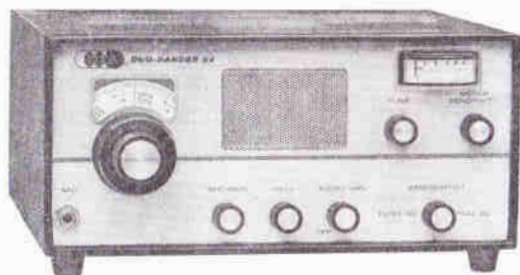
- Ship Special Package ZZM088 — \$199.95
- Ship Duo-Bander 84 — \$159.95
- Send Information on other Duo-Bander Packages
- Quote attached Trade
- Send Free 1966 Catalog
- Check or money order enclosed F.O.B. Council Bluffs, Iowa

Name \_\_\_\_\_ Call \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

**INTRODUCING WRL'S SENSATIONAL COMPACT 300 WATT DUO-BANDER 84 FOR IDEAL SSB TRANSCEIVING ON 80 AND 40 METERS**



**INTRODUCTORY OFFER UNTIL MAY 10TH**

**\$159<sup>95</sup>**  
\$8.00 MONTHLY

**WIRED**

**NOT A KIT! THE PERFECT FIRST OR SECOND — MOBILE OR FIXED STATION — TWO BAND TRANSCEIVER**

**COMPACT — 80-40 METER SSB TRANSCEIVER. A LOW COST RIG—WITHOUT SACRIFICE OF POWER AND PERFORMANCE. INCLUDES BUILT-IN SPEAKER AND GIMBAL MOUNT! E-Z TUNING WITH BANDPASS EXCITER DESIGN — JUST PEAK OUTPUT FOR SMALL QSY. Illuminated VFO dial with 2 kc calibration. High impedance mic. input with push-to-talk operation. Combination S-Meter/Output indicator. Smooth vernier (12:1 slow and 2:1 fast) VFO tuning.**

300 Watts PEP-SSB input, covering 3.8-4.0 and 7.1-7.3 mcs. (LSB-80 and 40 meters). A pair of proven 6HF5 final tubes. Separate, relay switched, tuned RF receiving stage, 1/2 uv. sensitivity at 10DB S/N. Rugged printed circuit boards, combination tube-transistor circuitry for best performance. Stable solid state VFO and balanced modulator, zener regulated. Selectivity 2.5 kc @ -6DB receiving and transmitting with a 4 crystal filter. Carrier and unwanted sideband suppression - 40DB. 1 watt of audio with built-in speaker. Fixed 50 ohm input/output impedance. Excellent AVC. COMPACT SIZE: 5" high, 11 1/4" wide, 10" deep, less power supply. Net weight 10 1/4 lbs. Shipping weight 15 lbs.

DUO-BANDER 84 .....	\$8.00 monthly .....	\$159.95
AC48 .....	250 Watt (115 VAC) Economy Supply .....	\$ 49.95
AC384 .....	300 Watt (115 VAC) Deluxe Supply .....	\$ 79.95
DC384 .....	300 Watt (12 VDC) Deluxe Supply .....	\$ 89.95

**SPECIAL**

**FIXED STATION PACKAGE**  
(INCLUDES DUO-BANDER 84 AND AC 48 SUPPLY)

**\$199.95**  
**\$10.00 Monthly**  
**Order Package**  
**ZZM088**

**WRITE FOR OTHER PACKAGE INFORMATION**